

1. A hitch assembly for mounting to a frame assembly of a vehicle, comprising:  
a one-piece hitch mounting structure having a general U-shape with opposing end portions and a centrally disposed intermediate portion between the end portions; and  
a hitch receiver mounted to the intermediate portion of the hitch mounting structure,  
wherein the end portions each include a mounting section with a general L-shaped cross-sectional configuration, thereby providing the end portions with horizontally extending mounting flanges structured to mount the hitch assembly to the frame assembly of the vehicle.
2. A hitch assembly according to claim 1, wherein the hitch mounting structure is formed from a substantially tubular body member having a generally rectangular cross-section.
3. A hitch assembly according to claim 1, wherein the intermediate portion of the hitch mounting structure has a generally rectangular cross-sectional configuration.
4. A hitch assembly according to claim 1, wherein the end portions include an elbow section with a general U-shaped cross-sectional configuration.
5. A hitch assembly according to claim 1, wherein each of the horizontally extending mounting flanges include a plurality of openings for mounting the hitch assembly to the frame assembly of the vehicle.
6. A hitch assembly according to claim 1, wherein the intermediate portion of the hitch mounting structure includes an opening structured to mount the hitch receiver.
7. A hitch assembly according to claim 6, wherein the intermediate portion has a general V-shape such that the end portions are positioned higher than the opening in the intermediate portion.

8. A hitch assembly according to claim 1, further comprising a safety chain mounting structure mounted between the intermediate portion of the hitch mounting structure and the hitch receiver to provide two safety chain openings.

9. A hitch assembly for mounting to a frame assembly of a vehicle, comprising:  
a one-piece hitch mounting structure having a general U-shape with opposing end portions and a centrally disposed intermediate portion between the end portions; and  
a hitch receiver mounted to the intermediate portion of the hitch mounting structure, wherein the end portions each include a mounting section with a general U-shaped cross-sectional configuration, thereby providing the end portions with vertically extending mounting flanges structured to mount the hitch assembly to the frame assembly of the vehicle.

10. A hitch assembly according to claim 9, wherein the hitch mounting structure is formed from a substantially tubular body member having a generally rectangular cross-section.

11. A hitch assembly according to claim 9, wherein the intermediate portion of the hitch mounting structure has a generally rectangular cross-sectional configuration.

12. A hitch assembly according to claim 9, wherein the end portions include an elbow section with a general U-shaped cross-sectional configuration.

13. A hitch assembly according to claim 9, wherein each of the vertically extending mounting flanges include a plurality of openings for mounting the hitch assembly to the frame assembly of the vehicle.

14. A hitch assembly according to claim 9, wherein the intermediate portion of the hitch mounting structure includes an opening structured to mount the hitch receiver.

15. A hitch assembly according to claim 14, wherein the intermediate portion has a general V-shape such that the end portions are positioned higher than the opening in the intermediate portion.

16. A hitch assembly according to claim 9, further comprising a safety chain mounting structure mounted between the intermediate portion of the hitch mounting structure and the hitch receiver to provide two safety chain openings.

17. A method of forming a hitch assembly for mounting to a frame assembly of a vehicle, the method comprising:

bending an elongated substantially tubular body member in a die assembly to form a one-piece hitch mounting structure having a general U-shape with opposing end portions and a centrally disposed intermediate portion between the end portions;

bending the end portions in the die assembly to form a mounting section with a general L-shaped cross-sectional configuration, thereby providing the end portions with horizontally extending mounting flanges structured to mount the hitch assembly to the frame assembly of the vehicle; and

mounting a hitch receiver to the intermediate portion of the hitch mounting structure.

18. The method according to claim 17, wherein the tubular body member has a generally rectangular cross-section.

19. The method according to claim 17, further comprising bending the end portions to form an elbow section with a general U-shaped cross-sectional configuration.

20. The method according to claim 17, further comprising forming a plurality of openings in each of the horizontally extending mounting flanges for mounting the hitch assembly to the frame assembly of the vehicle.

21. The method according to claim 20, wherein the plurality of openings are formed in a piercing operation in the die assembly.

22. The method according to claim 17, further comprising forming an opening in the intermediate portion of the hitch mounting structure for mounting the hitch receiver.

23. The method according to claim 22, wherein the opening is cut by a laser in a separate operation from the die assembly.

24. The method according to claim 22, wherein the intermediate portion is bent into a general V-shape such that the end portions are positioned higher than the opening in the intermediate portion.

25. The method according to claim 17, further comprising mounting a safety chain mounting structure between the intermediate portion of the hitch mounting structure and the hitch receiver to provide two safety chain openings.

26. A method of forming a hitch assembly for mounting to a frame assembly of a vehicle, the method comprising:

bending an elongated substantially tubular body member in a die assembly to form a one-piece hitch mounting structure having a general U-shape with opposing end portions and a centrally disposed intermediate portion between the end portions;

bending the end portions in the die assembly to form a mounting section with a general U-shaped cross-sectional configuration, thereby providing the end portions with vertically extending mounting flanges structured to mount the hitch assembly to the frame assembly of the vehicle; and

mounting a hitch receiver to the intermediate portion of the hitch mounting structure.

27. The method according to claim 26, wherein the tubular body member has a generally rectangular cross-section.

28. The method according to claim 26, further comprising bending the end portions to form an elbow section with a general U-shaped cross-sectional configuration.

29. The method according to claim 26, further comprising forming a plurality of openings in each of the vertically extending mounting flanges for mounting the hitch assembly to the frame assembly of the vehicle.

30. The method according to claim 29, wherein the plurality of openings are formed in a piercing operation in the die assembly.

31. The method according to claim 26, further comprising cutting an opening in the intermediate portion of the hitch mounting structure for mounting the hitch receiver.

32. The method according to claim 31, wherein the opening is cut by a laser in a separate operation from the die assembly.

33. The method according to claim 31, wherein the intermediate portion is bent into a general V-shape such that the end portions are positioned higher than the opening in the intermediate portion.

34. The method according to claim 26, further comprising mounting a safety chain mounting structure between the intermediate portion of the hitch mounting structure and the hitch receiver to provide two safety chain openings.

35. A retractable hitch assembly for mounting to a frame assembly of a vehicle, comprising:

a hitch mounting structure with end portions and a centrally disposed intermediate portion between the end portions, the end portions structured to mount the retractable hitch assembly to the frame assembly of the vehicle; and

a retractable hitch mechanism securely mounted to the hitch mounting structure, the retractable hitch mechanism including:

an outer hitch receiver mounted to the intermediate portion of the hitch mounting structure;

an inner hitch receiver telescopically mounted within the outer hitch receiver for sliding movement with respect to the outer hitch receiver between an extended position and a retracted position;

a reversible electric motor; and

a gear arrangement operatively mounted between the reversible electric motor and the inner hitch receiver,

wherein the reversible electric motor is electrically actuated to selectively drive the inner hitch receiver with respect to the outer hitch receiver via the gear arrangement between the extended and retracted positions thereof.

36. A retractable hitch assembly according to claim 35, wherein the hitch mounting structure is a one-piece structure having a general U-shape.

37. A retractable hitch assembly according to claim 36, wherein the end portions each include a mounting section with a general L-shaped cross-sectional configuration, thereby providing the end portions with horizontally extending mounting flanges structured to mount the hitch assembly to the frame assembly of the vehicle.

38. A retractable hitch assembly according to claim 36, wherein the end portions each include a mounting section with a general U-shaped cross-sectional configuration, thereby providing the end portions with vertically extending mounting flanges structured to mount the hitch assembly to the frame assembly of the vehicle.

39. A retractable hitch assembly according to claim 36, wherein the hitch mounting structure is formed from a substantially tubular body member having a generally rectangular cross-section.

40. A retractable hitch assembly according to claim 36, wherein the intermediate portion of the hitch mounting structure has a generally rectangular cross-sectional configuration.

41. A retractable hitch assembly according to claim 36, wherein the end portions include an elbow section with a general U-shaped cross-sectional configuration.

42. A retractable hitch assembly according to claim 35, wherein the intermediate portion of the hitch mounting structure includes an opening structured to mount the outer hitch receiver.

43. A retractable hitch assembly according to claim 42, wherein the intermediate portion has a general V-shape such that the end portions are positioned higher than the opening in the intermediate portion.

44. A retractable hitch assembly according to claim 35, wherein the inner hitch receiver include a receiver ring on one end thereof.

45. A retractable hitch assembly according to claim 35, wherein the gear arrangement is a rack and pinion gear arrangement, the rack and pinion gear arrangement including a pinion gear provided on an output shaft of the reversible electric motor and a rack provided on a side wall of the inner hitch receiver.

46. A retractable hitch assembly according to claim 35, further comprising a locking assembly to lock the inner hitch receiver in the extended position thereof.

47. A retractable hitch assembly according to claim 46, wherein the locking assembly includes a solenoid having a drive shaft that is movable between extended and retracted positions and a locking pin rigidly mounted to the drive shaft so as to move with the drive shaft between extended and retracted positions, the solenoid being electrically

***U.S. Application of JAEKEL et al.  
Application No. 10/777,208***

connected to the reversible electric motor such that the solenoid is actuated when the inner hitch receiver reaches the extended position so as to move the locking pin from the retracted position into the extended position wherein the locking pin operatively engages the inner hitch receiver to lock the inner hitch receiver with respect to the outer hitch receiver.